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ELECTRIC-SPARK GRINDING,
HIGH-SPEED CUTTING UP OUTPUT

ELECTRIC CURRENT REPLACES CARBORUNDUM -- Zycie Warszawy, No 92, 2 Apr 50

To date, tools have constituted the bottleneck in high-speed steel cutting. Hard-alloy cutting tools formerly were ground by means of costly special carborundum wheels. The production of one ton of special carborundum requires as much power as the production of tens of tons of steel.

Electric spark grinding has been introduced recently. An ordinary steel or iron grinding wheel revolving at a speed of 3,000 revolutions per minute is used. One terminal of the electric circuit is attached to the wheel and the other to the work. When the work touches the wheel the circuit is closed and the point of contact heats to a high temperature. The work softens and the fast revolving wheel casts off the heated particles of steel. Tools of the hardest alloys can be ground easily. The grinding wheel does not become overheated because it revolves at a high speed and the contact point varies constantly.

This method was developed by the well-known Soviet efficiency expert, Engineer Perlin.

HIGH-SPEED METAL CUTTING -- Glos Wielkopolski, No 78, 20 Mar 50

Most metal cutting machines can be adapted to high-speed cutting methods by the installation of more powerful motors, by an increase in the number of gears in the transmissions, by the installation of mechanical carriage supports, or other minor changes.

For high-speed metal working, drilling machines and milling machines have special cutting tools of alloys produced by sintering with cemented carbides of tungsten and titanium (powder metallurgy) to make the tools resistant to the high temperature created by high cutting speeds. The outstanding feature of the sintered alloys is that they wear away at a lower rate than high-speed steel.

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Recent experiments have shown that the best results from sintered alloys for high-speed metal cutting are attained when multicutter discs (graduated cutters) or revolving cutting tools are used. Instead of the present rate of 20 or 30 meters per minute, over 140 meters per minute were attained with such a system. The angle of grinding is also important when using a single cutter. Sintered alloys work very well on negative angles.

During the Poznan International Fair, a national conference will be held in Poznan by the Association of Polish Engineers and Mechanics to discuss problems of high-speed metal cutting.

The J. Stalin Metalworking Enterprise in Poznan is devoting much time to improving efficiency in metal-working. Recently, the local Technological Club held a conference there, to which engineers and workers from Wlepowana and Mechanical Equipment Factory No 3 were invited.

TOOLS PLATED WITH HARD ALLOYS -- Wolnosc, No 69, 26 Mar 50

In many sections of the Moscow Machine Tool Factory imeni Ordzhonikidze, hard-alloy plated tools are used on a large scale. Hard-alloy plating of tools is simple and inexpensive with the use of hard-alloy powder. It takes from one half to 2 minutes to plate a tool.

With the introduction of this method high-speed cutting can be applied in many important processes. Helical rollers formerly were machined with ordinary tools at a speed not exceeding 475 revolutions per minute. When cutting tools were plated with hard alloys, the number of revolutions per minute could be increased fourfold. Deep drilling of steel bars was formerly done at 70 revolutions per minute. Now the operation has been increased to 800-900 revolutions. At the same time, the wear on tools has been greatly reduced.

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